March 3, 1936. V. GAZULLA ET AL 2,032,930

ELECTRIC SAFETY MECHANISM FOR CINEMATOGRAPHS

Filed July 7, 1933 2 Sheets-Sheet 1

FIG. 1

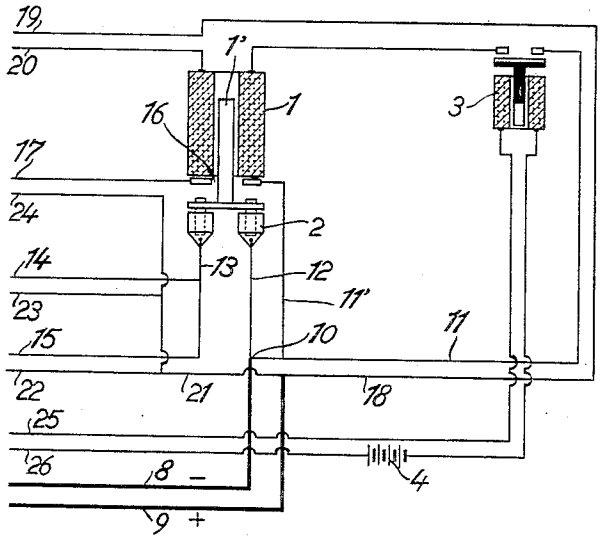


FIG. 2

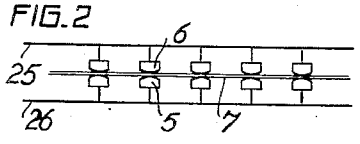


FIG. 3

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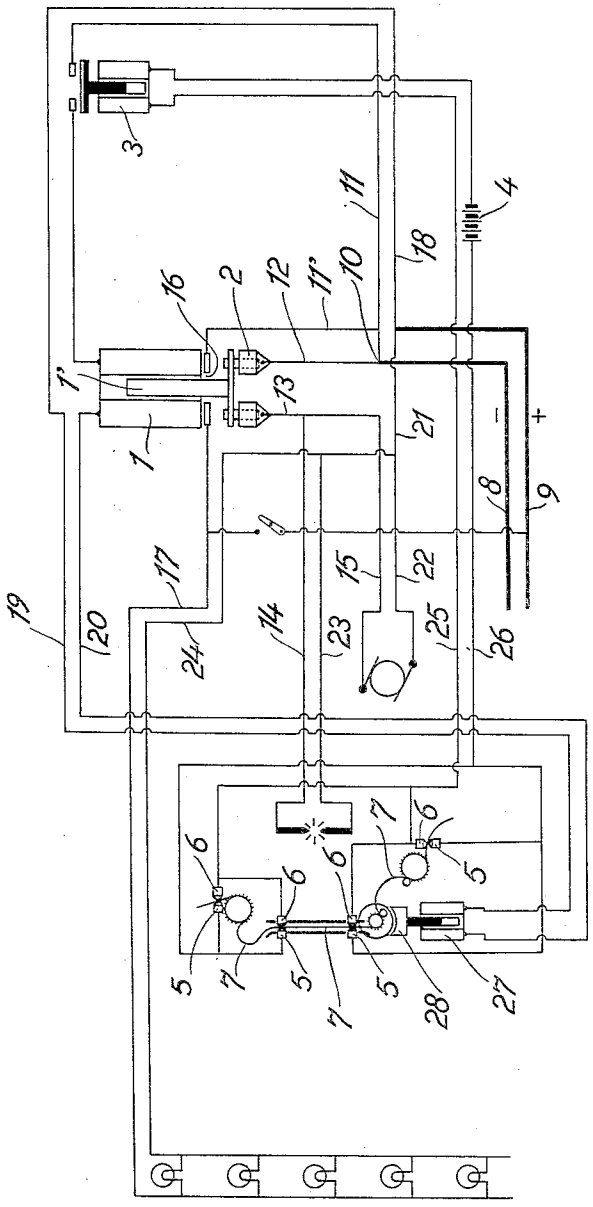


FIG.4.

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ELECTRIC SAFETY MECHANISM FOR CINEMATOGRAPHS

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Application July 7, 1933, Serial No. 679,446
In Spain August 4, 1932

3 Claims. (Cl. 88—17)

It is known in cinematographic apparatus that when, by some mischance, the travel of the film in front of the objective is interrupted, the film, in the majority of cases, quickly catches fire, frequently causing panic and disturbances having grave consequences.

By installing electric mechanism according to the invention, conflagration due to the film catching fire as in the cases above mentioned is avoided, so that when the travel of the film is interrupted by tearing of the film, or by the snapping of the transmission belt which drives it, the electric arc of the projection apparatus will be automatically extinguished and the motor will be stopped and will remain inoperative during the lighting of the hall in which the film is being shown.

The means for attaining these results comprise contact members which are separated and isolated electrically by the interposition of the film and of the belt regulating the driving mechanism, during the normal operation of the cinematograph, but which, when the film or the belt happens to break, that is to say, when the film remains at rest before the objective, are put into contact and operate a switch to cause the breaking of the circuit of the projection arc, and of the motor, and at the same time to effect the completion of a feed circuit for the lamps which light the hall or room within which the cinematograph is being operated or the film shown.

The electric mechanism according to the invention comprises a relay which enters into operation when one or other of pairs of the above-mentioned contacts are touching, this contact being effected by an auxiliary circuit which is advantageously independent of the several installation circuits which feed the arc, the motor and the lighting lamps.

The apparatus according to the invention is diagrammatically illustrated by way of example in the accompanying drawings.

Figure 1 shows the installation diagram of the mechanism according to the invention.

Figure 2 shows the disposition of the contact members.

Figure 3 shows a view of the container within which the greater number of the operative parts of the mechanism are enclosed.

Figure 4 is a diagram of the electrical circuits showing the relative disposition of the film-controlled circuit and the circuits of the projection arc driving motor and house lamps.

1 is an electro-magnet with an armature 1' which effects the operation of a mercury-switch 2.

3 is a relay which is advantageously operated by a battery 4 of low voltage which is independent of the electrical feed system of the general installation of the cinematograph. This relay serves to open and close the feed circuit of the electro-magnet 1.

Contact members, such as 5 and 6, disposed close together and opposite are provided in the operating circuit of the relay 3 and between each pair of these contacts passes the film 7, (Figure 2) in such manner that the pairs of contacts 5 and 6 are isolated one from the other: but should the film 7 by chance break, the contact parts of one or of several of the pairs of contacts 5 and 6 touch, and the circuit which energizes the relay 3 from the battery 4, is closed thus closing the circuit of the electro-magnet 1.

The electro-magnet 1 then enters into operation, opening the mercury switch 2 which opens the feed circuit of the projection arc, and of the motor, and on the other hand, at 16, closes the feed circuit of the lighting lamps of the hall so that the hall is not left in darkness.

As will be seen from the diagrams (Figures 1 and 4) the negative lead 8 of the installation circuits branches at 10; one branch 11 normally, interrupted by the relay 3 leads to the electro-magnet 1. An off-shoot 11' of this branch 11 feeds the conductor 17 which is connected to the lighting lamps of the hall or room to effect the lighting of the lamps when the circuit is established by the contacts 16 as has been hereinbefore described. The other branch 12 normally serves to carry current to the projection arc through leads 13 and 14, and to the motor by leads 13 and 15.

From the positive lead 9 one lead is connected through the lead 18 19 to an electro-magnet 27, operating a brake 28 of the driving mechanism. A lead 20 connects the electro-magnets 1 and 27. The other branch 21 passes by the lead 22 to the motor, by the lead 23 to the arc, and by the lead 24 to the lamps of the hall.

In Figure 3 is shown an outside view of the container in which the majority of the parts referred to, are housed, showing the positioning of the terminals the leads to which are designated by the corresponding numbers in the diagram of Figures 1 and 4, 25 and 26 being those of the circuit which is closed when the pairs of contacts for effecting the operation are touching. These pairs of contacts may be provided both in conjunction with the film and with the belt operating the driving mechanism so that in case of snapping of the belt, the projection would also

be stopped and the film interrupted in its travel.

It will be understood that the electric mechanism described could also be constructed with various modifications and with the component parts disposed in various ways, without this variation effecting the essence of the invention.

We claim:

1. An electric safety mechanism for use with cinematographs and operative on breakage of the film to interrupt the supply of current to the source of light and to the motor driving the cinematographic mechanism to apply a brake to the driving mechanism and to establish the supply of current for the lamps lighting the hall in which the cinematograph is operated, comprising a source of current, a plurality of pairs of contact devices distributed along the path of the film, the components of the said devices being normally separated by the film, an electro-magnetic relay, said source of current, pairs of contact devices and relay being included in a circuit serving as a control circuit, make and break devices provided respectively in the supply circuits of the motor, the source of light and the hall lamps, electro-magnetic means for effecting the operation of the said make and break devices, the said electro-magnetic means being included in a circuit closed by the relay when energized, a brake for the driving mechanism of the cinematograph, and electro-magnetic means for operating the said brake, which electro-magnetic brake-operating means are provided in a circuit which is closed when the relay is energized.

2. An electric safety mechanism for use with cinematographs and operative on breakage of the film to interrupt the supply of current to the source of light and to the motor driving the cinematographic mechanism and to establish the supply of current for the lamps lighting the hall in which the cinematograph is operated, comprising a casing, an electro-magnetic relay with closable contacts, a plurality of make-and-break devices, and an electro-magnet and movable armature for operating said make-and-break devices, said relay, make-and-break devices and electro-magnet being contained within the said casing, a plurality of pairs of terminals mounted upon the said casing and in circuits connected to said relay, make-and-break devices and electro-magnet, so that circuits are formed to certain of said terminals under control of the make-and-break devices, a circuit is formed with other of said terminals to include the electro-magnet and the relay contacts and a circuit is formed with other of the terminals to include the relay, and a plurality of pairs of contacts adapted to be distributed along the path of the film, the components of the respective pairs being positioned on opposite sides of the film so as to be separated thereby, said contact devices and a source of current being connected in circuit to the terminals with which the relay is connected, other pairs of terminals being respectively connected in circuit to a source of supply and to the circuits supplying the motor, the source of light and the hall lamps.

3. An electric safety mechanism for use with cinematographs and operative on breakage of the film to interrupt the supply of current to the source of light and to the motor driving the cinematographic mechanism and to establish the supply of current for the lamps lighting the hall in which the cinematograph is operated, according to claim 2, comprising also a brake applied to the driving mechanism of the cinematograph, an electro-magnet for controlling the operation of said brake, a pair of terminals upon the said casing connected for closure by said relay when energized, and a make and break device within the casing adapted for control by said relay, said make and break device, said terminals and said electro-magnet being included in a circuit.

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